

Newborn Screening: Blood Specimen Collection



Arizona's Newborn Screening Program

- Overview
- Specimen Collection



Program Components

- Hospitals and birthing centers
- ADHS Lab
- ADHS Follow-up
- ADHS Billing
- Primary Care Providers
- Midwives
- Contracted Medical Specialists
- ADHS Education

Authority

- Arizona Revised Statutes

- Title 36, Chapter 6, Article 5 (36-694 and 36-694.01)
- <http://www.azleg.state.az.us/ArizonaRevisedStatutes.asp?Title=36>

- Arizona Administrative Code

- Title 9, Chapter 13
- http://www.azsos.gov/PUBLIC_SERVICES/Title_09/9-13.htm

Panel of Disorders

- Hearing Loss
- 6 Amino Acid disorders
- 5 Fatty Acid Oxidation disorders
- 9 Organic Acid disorders
- Biotinidase Deficiency
- Galactosemia
- Congenital Hypothyroidism
- Congenital Adrenal Hyperplasia
- Hemoglobinopathies
- Cystic Fibrosis

Selecting Disorders for Screening

- Prevalence
- Inexpensive and reliable testing
- Effective treatment/intervention
- No treatment =
death or severe retardation
- Appears normal at birth

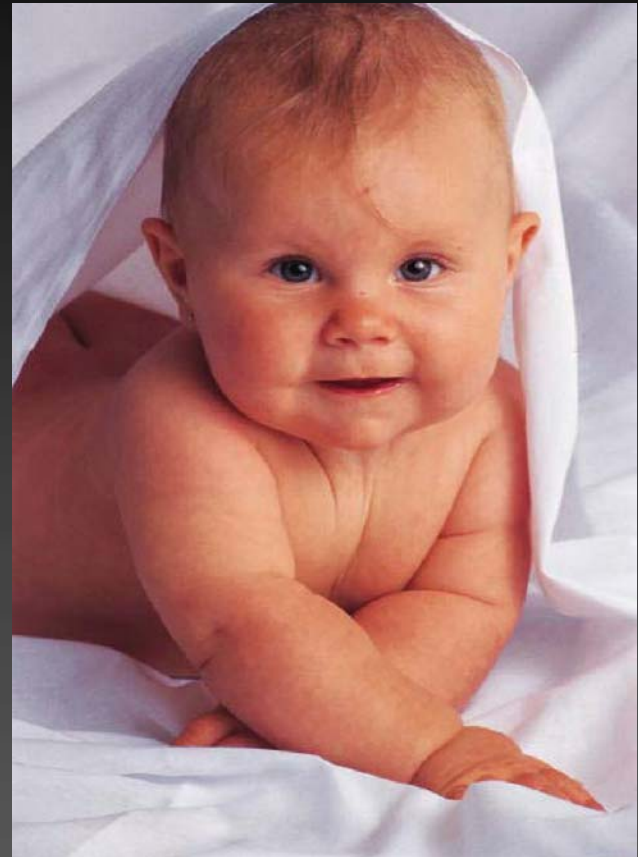
2 Screens for Each Newborn

- 2 screens collected on filter paper
- 1st screen:
 - 24-72 hours of life
 - Prior to transfusion
 - Prior to discharge
- 2nd screen:
 - 5-10 days of age
 - First PCP visit



Screening and not PKU

- ~~PKU Test~~
- Newborn Screening



Process

- Specimen collected and allowed to dry
- Mailed to laboratory within 24 hours
- Laboratory tests specimen
- Normal results mailed to provider who ordered specimen
- Abnormal results tracked by follow-up team

Laboratory



Tandem Mass Spectrometer (MS/MS)

Disorders Detectable with MS/MS

Amino Acid

- PKU
- HCU
- MSUD
- ASA
- Tyrosinemia 1
- Citrullinemia

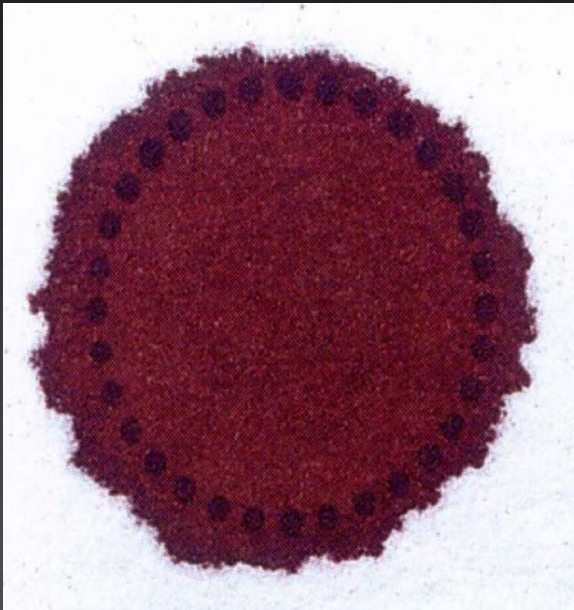
Organic Acid

- Isovaleric Acidemia
- Gluteric Acidemia 1
- HMG-CoA
- Multiple carboxylase
- Methylmalonic Acidemia
- Cbl A, B
- 3MCC
- Propionic Acidemia
- Beta-Ketothialase

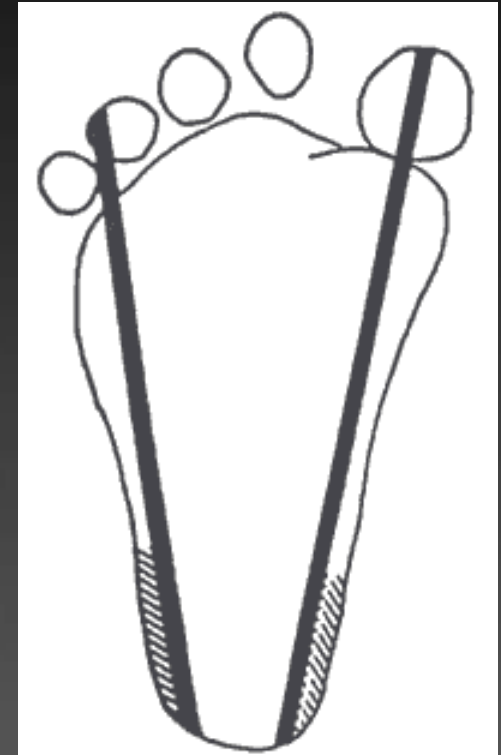
Fatty Acid Oxidation

- MCADD
- VLCADD
- Tri-functional Protein
- Carnitine Uptake
- LCHADD

Specimen Collection



Allow sufficient amount of blood to completely fill the circle



Collection

- No difference in quality between heel stick and venous or capillary tube
- Best practice = comfort level and experience of person drawing blood
- Ensure nothing solid touches paper
- Blood drops like eye drops

First Screens

- Fill out *ALL* information on card
- Give Mother information about second screen
- Place a patient label/sticker on the back side of the top sheet (ensures basic info can be read legibly)
- Contact Follow-up if you have unsatisfactory specimens

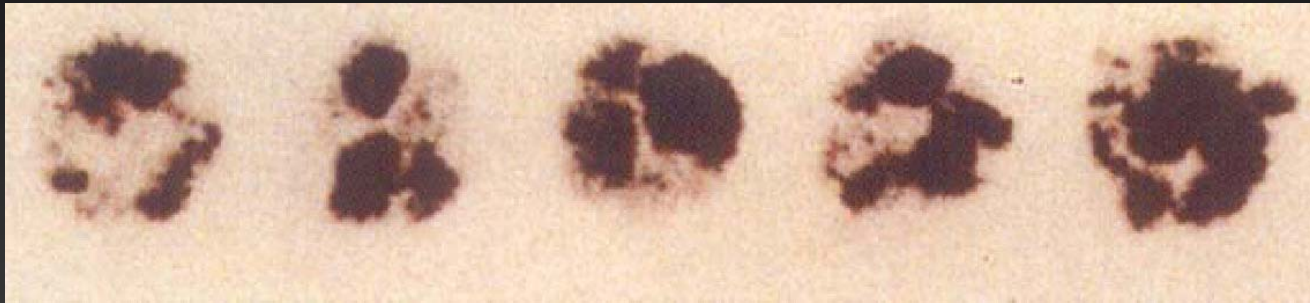
Second Screens

- Fill out *ALL* information on card
- Baby's insurance info is also required. If baby does not have insurance, then say so. Otherwise, we bill the submitter.
- Contact Follow-up if you have unsatisfactory specimens

Unsatisfactory Specimens

- Accurately and precisely testing newborn screening specimens requires good collection methods...consistently
- A delay in testing a good specimen may lead to delayed treatment
- The following are reasons why the laboratory may not test a specimen:

Insufficient



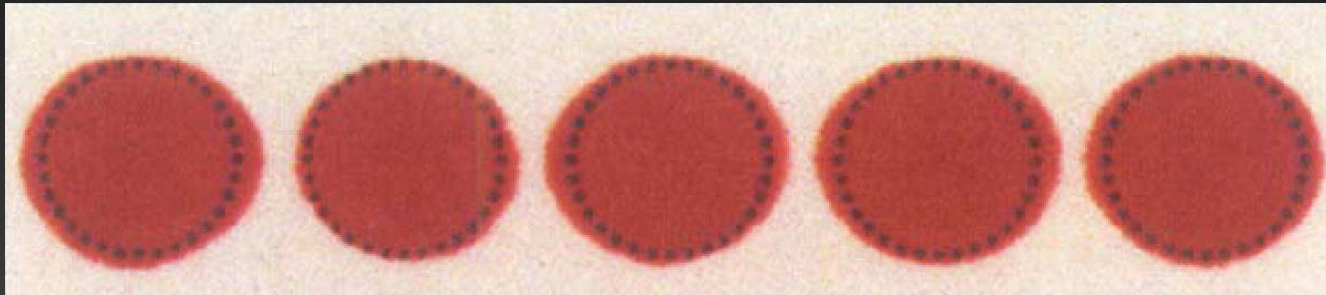
- All circles not filled with blood
- Entire circle not filled with blood
- Didn't soak through filter paper

Scratched or Abraded



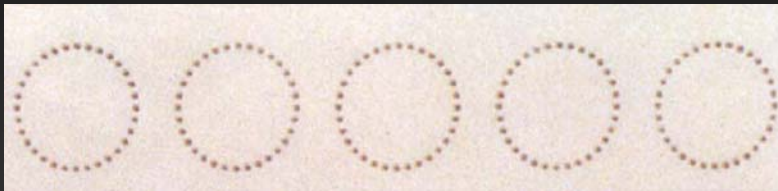
- Filter paper mutilated

Not Dry Before Mailing



- Placed in sealed plastic bag before dry

No Blood



Serum Rings



- Serum separated into clear rings around blood spot
- Card dried vertically (on side) instead of flat
- Squeezing excessively around puncture site

Clotted or Layered



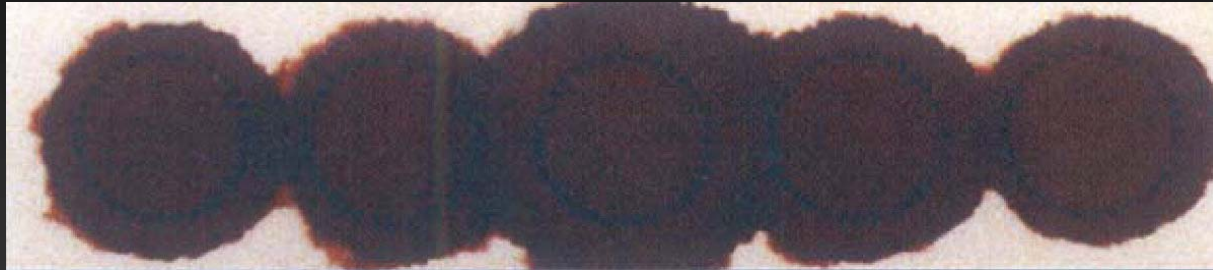
- Layers of blood on same circle of card
- Capillary tube used for collection
- Blood applied to both sides of filter paper

Diluted or Contaminated



- Foot not dried completely from alcohol
- Something spilled on filter paper before or after blood collection

Supersaturated



- Application of excess blood, usually with a syringe
- Blood should not touch between circles



Arizona Newborn Screening

Phone

- (602) 364-1409
- (800) 548-8381 (outside Maricopa County)

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- (602) 364-1495

Website

- www.AZnewborn.com



Arizona Department of Health Services

Thank You!